DEFENSE ACQUISITION UNIVERSITY

ENG 202 - Applied Systems Engineering in Defense Acquisition, Part II

150528

Course Learning/Performance Objectives followed by its enabling learning objectives on separate lines if specified.

1	**Given an overview of the DoD System Engineering (SE) Processes, including Technical Processes and Technical Management Processes, describe how they can be applied to improve the efficiency of DoD acquisition.**
	Identify the role of the SE Technical Processes in DoD acquisition as described in DAG Chapter 4.
	Identify the role of the SE Technical Management Processes in DoD acquisition as described in DAG Chapter 4.
	Given a Tower manufacturing scenario, relate the SE Technical Process steps, as described in the DAG Chapter 4, to the development of the Tower.
	Given a Tower manufacturing scenario, use the system's CONOPS and architecture description to identify potential interoperability issues.
2	**Given an overview of the Defense Acquisition Process, the Requirements Generating Process, and the Budget Process, relate how these processes are reflected in the DoD 5000 series documents and how they influence DoD Systems Engineering across the acquisition life cycle.**
	Identify the role of the major decision support systems (Defense Acquisition System, JCIDS, and PPBES) and their relationship to Systems Engineering (SE).
	Given current trend data on DoD acquisition cost, schedule and performance, identify how the current SE policies are attempting to reverse the negative trends.
	Identify the characteristics of the acquisition program models as described in the DoDI 5000.
	Identify the purpose of the SE activities throughout the acquisition lifecycle as described in DAG Chapter 4.
3	**Apply the processes for SE Design, Configuration Management, Performance Specifications development, and Statement of Work development in a given DoD acquisition scenario to reduce technical risk.**
	Describe the characteristics of effective technical communication.
	Given rules for the development of a Statement of Work (SOW), correct a list of poorly written SOW statements.
	Given rules for the development of specification requirements, identify which requirements are performance specifications and which requirements are detailed specifications.
	Given a Work Breakdown Structure (WBS) exercise, discuss how the WBS can be used to support DoD Risk Management processes.
	Given the SE Technical Processes, use the "design' part of the process to demonstrate how to flow-down a product requirement through the Requirements Analysis and Architectural Design steps.
	Given a manufacturing scenario, explain how the use of DoD Earned Value Management techniques of CPI and SPI are used to evaluate program status.
4	**Given an overview of the BBP 3.0 policy, and strategies for Data Rights and Open Systems Architecture, explain how they can be used to achieve greater efficiency in DoD acquisition.**
	Given an overview of the BBP 3.0 initiative, identify the key ideas applicable to the DoD acquisition community.
	Identify the purpose of "Will Cost and Should Cost" as it relates to SE across the DoD acquisition life cycle.
	Given an overview of potential cost savings benefits associated with smart application of Open Systems Architecture and Data Rights methodologies, identify how they could be applied in DoD acquisition.
5	**Given an overview of the DoD policies and guidelines for developing a Systems Engineering Plan (SEP), identify the issues associated with a poorly written SEP.**
	Given a technical planning scenario, discuss how SE processes can reduce risk.
	Discuss best practices and lessons learned in the development of a Systems Engineering Plan as delineated in the SEP Outline.
	Discuss the DoD policy and processes for developing and maintaining a Systems Engineering Plan.
	Given an acquisition scenario, identify deficiencies in a draft SEP based on guidance provided by the SEP Outline.
	Discuss the impact of insufficient SE technical planning on the outcome of a DoD acquisition program.
	Discuss what areas can be expected to have major updates to the SEP when transitioning into the next acquisition phase.
6	**Apply system requirements and Analysis of Alternatives processes in a Materiel Solution Analysis (MSA) phase exercise with a given set of Defense Acquisition Guide (DAG) SE processes and tools to improve lifecycle efficiency.**
	Relate how the SE processes affect the technical planning and execution involved in the MSA phase.
	Given a MSA phase scenario, demonstrate how the Initial Capabilities Document and Market Research Reports can impact selection of system alternatives based on capability to meet User requirements given technological risks and programmatic cost/schedule constraints.

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	Relate how the DoD SE Technical Review(s) discussed in the DAG for the MSA phase are used to reduce technical risk.
	Identify the Technical Inputs and Outputs for the MSA phase as per the DAG Chapter 4.
	Identify the characteristics of a well-formulated requirement in accordance with Mil-Std 961.
	Given an Initial Capabilities Document (ICD), demonstrate how to conduct basic functional analysis/allocation to support the initial architectural design process.
	Determine if a product or product elements meets the definition of a Critical Technology.
7	**Apply system requirements, the use of technical reviews, and the use of competitive prototyping in a Technical Maturation and Risk Reduction (TMRR) phase exercise with a given set of Defense Acquisition Guide (DAG) SE processes and tools to improve lifecycle efficiency.**
	Relate how the SE processes affect the technical execution and planning involved in the TMRR phase.
	Given a TMRR phase scenario, demonstrate how prototyping can be used to assess maturity of high risk technologies based on the capability to meet User requirements delineated in the Draft CDD within programmatic cost/schedule constraints.
	Relate how the DoD SE Technical Review(s) discussed in the DAG for the TMRR phase are used to reduce technical risk.
	Identify the Technical Inputs and Outputs for the TMRR phase as per the DAG Chapter 4.
	Identify what information is provided by the Capabilities Development Document and System Specification.
	Given a TMRR phase scenario, use the matrix in the lesson to flow requirements from the draft CDD to the Program Specification and identify which requirements are well-formulated and traceable.
	Identify the purpose of DoD competitive prototype testing and the verification methods that can be used to ensure the product meets the specification requirement.
	Relate the technical specifications and the technical reviews associated with the establishment of the Configuration Management Baseline.
	Recognize the uses and cautions of using Technical Readiness Levels (TRLs) to indicate progress.
8	**Given DoD technical risk management problem solving scenarios, provide rationale for the selection and defense of a best solution using the guidance provided in the DoD 5000 series documents, DAG, and DoD Risk Management Guide.**
	Given a risk management scenario, demonstrate the use of the DoD Risk Management process steps.
	Given a risk management and problem solving scenario, demonstrate use of the Risk Reporting Matrix using the Likelihood and Consequence Tables discussed in this lesson.
	Given a risk management and problem solving scenario, defend the best option to pursue to control risk.
	Given a risk management and problem solving scenario, determine specific implications of potential Design Considerations.
9	**Given a DoD Production and Deployment scenario, apply materiel and non-materiel solutions in accordance with CJCSI 3170.01 series.**
	Relate how the SE processes affect the technical execution and planning involved in the EMD phase.
	Given a EMD phase scenario, demonstrate how requirements changes in the CDD and/or CPD impact system/subsystem design trades to optimize capability to meet User requirements within programmatic cost/schedule constraints.
	Relate how the DoD SE Technical Review(s), Audits, and/or Program Assessments, discussed in the DAG for the EMD phase, are used to reduce technical risk.
	Identify the Technical Inputs and Outputs into the EMD phase as per the DAG Chapter 4.
	Discuss how DoD Configuration Management processes support managing the physical configuration from PCA through to end of service life.
	Given an EMD phase scenario, assess planned versus actual system performance over time based on Technical Performance Measure (TPM) data provided.
10	**Apply system requirements, configuration management, and the application of a rapid acquisition processes in a Production and Deployment (PD) phase exercise with a given set of Defense Acquisition Guide (DAG) SE processes and tools to improve lifecycle efficiency.**
	Relate how the SE processes affect the technical execution and planning involved in the P&D phase.
	Relate how the DoD SE Technical Review(s) and Audits discussed in the DAG Chapter 4 for the P&D phase are used to reduce technical risk.
	Identify the Technical Inputs and Outputs of the PD phase as per DAG Chapter 4.

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	Given a JUON requirement, develop an acquisition strategy that meets User's needs and is in accordance with the appropriate DoDI 5000.02 Program Model.
	Given a Configuration Management exercise, identify how risk planning could have been used to mitigate the issues highlighted in the program office scenario.
	Recognize the uses and cautions of using Manufacturing Readiness Levels (MRLs) to indicate progress.
	Identify basic principles of Lean, Six Sigma, and Theory of Constraints Manufacturing concepts.
	Given a production scenario, conduct SE analysis to determine potential root causes for manufacturing issues.
11	**Apply system requirements, technical assessment/planning, and the application of the System Safety Matrix in an Operations and Support (OS) phase exercise with a given set of Defense Acquisition Guide (DAG) SE processes and tools to improve lifecycle efficiency.**
	Relate how the SE processes affect the technical execution and planning involved in the O&S phase.
	Relate how the DoD SE Technical Review(s) discussed in the DAG Chapter for the O&S phase are used to reduce technical risk.
	Identify the Technical Inputs and Outputs into the O&S phase as per the DAG Chapter 4.
	Given an O&S phase scenario, illustrate the DoD preferred steps for system disposal and identify typical hazardous materials that could be encountered.
	Given an O&S phase scenario, interpret the User's Product Deficiency Sheets to develop a prioritized correction plan that considers technical risks, funding priorities, and implementation schedule.
	Given a specific risk, the student will classify the risk IAW either using the DoD Risk Management Guide or MIL-STD-882E as appropriate.
	Given an O&S phase scenario, illustrate the types of funds and modification strategies available to correct deficiencies and insert capability improvements to fielded systems.